

WHAT IS CLAIMED IS:

- Sub a1
- 1 1. An isolated nucleic acid encoding a vertebrate translation initiation factor
  - 2 4AIII (eIF-4AIII) having an amino acid sequence substantially homologous to that of
  - 3 SEQ ID NO:2.
  - 1 2. The isolated nucleic acid of Claim 1 wherein the amino acid sequence is SEQ
  - 2 ID NO:2 or SEQ ID NO:2 with a conservative amino acid substitution.
  - 1 3. The isolated nucleic acid of Claim 2 wherein the nucleic acid contains the
  - 2 coding sequence of SEQ ID NO:1.
  - 1 4. The isolated nucleic acid of Claim 1 further comprising an heterologous
  - 2 nucleotide sequence.
  - 1 5. The isolated nucleic acid of Claim 4 wherein the heterologous nucleotide
  - 2 sequence encodes a fusion protein or fusion peptide.
  - 1 6. The isolated nucleic acid of Claim 1 operatively linked to an expression
  - 2 control sequence.
  - 1 7. A unicellular host transformed or transfected with the nucleic acid of Claim 6.
  - 1 8. A method of expressing the eIF-4AIII comprising culturing the unicellular host
  - 2 of Claim 7 in an appropriate cell culture medium under conditions that provide for
  - 3 expression of the protein by the cell.
  - 1 9. The method of Claim 8 further comprising the step of purifying the eIF-4AIII.
  - 1 10. The purified form of the eIF-4AIII obtained by the method of Claim 9.
- Sub a2

1 11. An isolated nucleic acid containing 15 or more nucleotides that hybridizes to  
2 SEQ ID NO:1 under standard hybridization conditions.

1 12. The isolated nucleic acid of Claim 11 that hybridizes to nucleotides 1 to 90 of  
2 the coding region of SEQ ID NO:1 under standard hybridization conditions.

1 13. An isolated vertebrate translation initiation factor 4AIII (eIF-4AIII) having an  
2 amino acid sequence substantially homologous to that of SEQ ID NO:2.

1 14. The isolated eIF-4AIII of Claim 13 having the amino acid sequence of SEQ ID  
2 NO:2 or SEQ ID NO:2 with a conservative amino acid substitution.

1 15. The isolated eIF-4AIII of Claim 13 containing the amino acid sequence of  
2 SEQ ID NO:4.

1 16. The isolated eIF-4AIII of Claim 13 having a detectable label.

1 17. A proteolytic fragment of the isolated eIF-4AIII of Claim 13.

1 18. A chimeric protein comprising a fusion protein or peptide and the proteolytic  
2 fragment of Claim 17.

1 19. A chimeric protein comprising a fusion protein or peptide and an eIF-4AIII  
2 having an amino acid sequence substantially homologous to that of SEQ ID NO:2.

1 20. An antibody to an isolated vertebrate translation initiation factor 4AIII (eIF-  
2 4AIII) having an amino acid sequence substantially homologous to that of SEQ ID  
3 NO:2.

1 21. The antibody of Claim 20 that binds amino acids 1-30 of SEQ ID NO:2.

1 22. The antibody of Claim 21 which is a monoclonal antibody.

1 23. A method for identifying a potential drug that modulates the ability of the eIF-  
2 4AIII of Claim 13 to induce the transcription of epidermal markers comprising:

3 (a) injecting an mRNA encoding the eIF-4AIII into an animal pole of a 2-  
4 cell stage embryo in the presence of an agent;

5 (b) isolating the animal pole explant at the late blastula stage;

6 (c) culturing the animal pole explant until the midneurula stage;

7 (d) extracting the RNA from the animal pole explant;

8 (e) assaying for the transcription of an epidermal marker protein; and

9 (f) comparing the amount of transcription in the presence of the agent  
10 relative to in its absence; wherein an agent that enhances or diminishes said  
11 transcription relative to in its absence is identified as a potential drug that modulates  
12 the ability of the eIF-4AIII to induce the transcription of epidermal markers.

1 24. The method of Claim 23 wherein said assaying the transcription of the  
2 epidermal marker is performed by reverse transcriptase polymerase chain reaction.

1 25. The method of Claim 23 wherein the 2-cell stage embryo is a xenopus embryo.

1 26. The method of Claim 23 wherein the animal pole explant is dissociated for 2-6  
2 hours and then reaggregated prior to said culturing of step (c).